

APPLICATION		REVISIONS			
NEXT ASSY	USED ON	LTR	DESCRIPTION	DATE	APPROVED
		A	CORRECT SCHEMATIC ERRORS	2/8/78	Juster
		B	ADD MATERIAL LIST	2/10/78	Just

Schwartz

From G. Justice
m/s 359

XEOS
Pasadena

2/16/78

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DR. G. Foster 1/3/78

CHK. 5 8/10 216178

M.E. APPD. / /

E.E. APPD. / /

APPD. Sierra 216178

XEROX
ELECTRO-OPTICAL SYSTEMS
220 NORTH HALSTEAD STREET, PASADENA, CALIFORNIA 91107

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1170. 77 SERVING

ANNUAL SERIAL

Deutsche Presse-Agentur — *AP* — *UPI* — *Gamma* — *Magnum* — *Contrasto*

COMMUNICATIONAL CONTROL

COMMUNICATION CONVERGE

DWG. A SIZE	596P61520	REV. B
	SH 1 OF 14	

XEROX

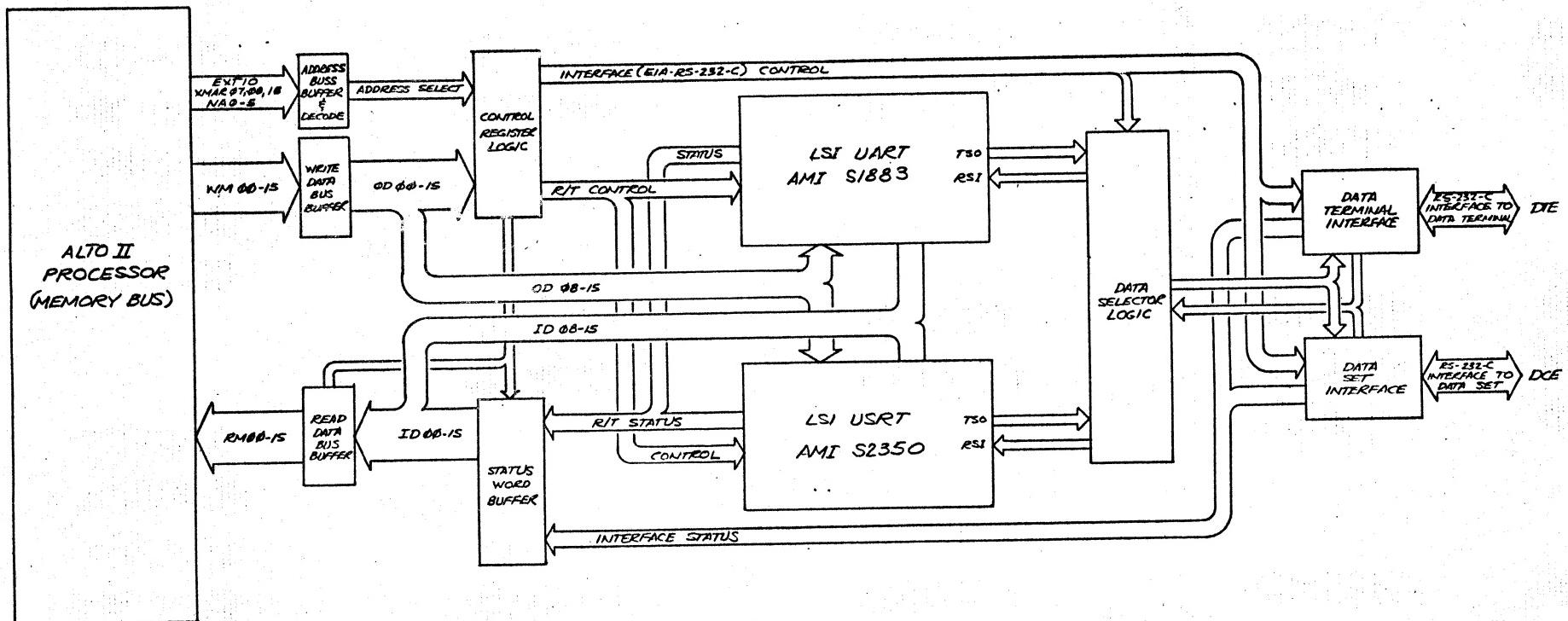
Material List

ML	Drawing No. 596P61520	Rev. B
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Rev.	Drawing Title ALTO II SERIAL COMMUNICATION CONTROL	Model No.	Date 2/9/78	Sheet 3 of 14	
Drawing No.	Item No.	Drawing Title	Drawing No.	No. Req.	Remarks
ML	1	BOARD, GENERAL PURPOSE, WIRE-WRAP	596P61506A	1	
	2	MICROCIRCUIT 8T98N		15	A1,A9,A12,B1,C1,C2,C4,C9,C12, E1,E12,F1,F9,G1,G12
	3	74LS75N		2	AS,BS
	4	7485N		1	A6
	5	74LS02N		3	A8,B9,C6
	6	74LS174N		1	A10
	7	7438N		1	A11
	8	1489PC		3	A13,B13,G13
	9	74LS138N		2	B6,F10
	10	S2350P		1	B7
	11	74LS00N		5	B8,B11,F8,G9,G11
	12	7493AN		1	B10
	13	8T97N		10	B12,C3,C5,C8,E2,E3,E5, F5,F12,G5
	14	74LS30N		1	C6
	15	F4702PC		1	C10
	16	74221N		2	C11,A8
	17	1488PC		3	C13,E13,F13
	18	74LS175N		4	D2,D4,E10,G10
	19	7404N		1	D5
	20	74LS10N		2	E4,F11
	21	7425N		1	E9
	22	CD4011BE		1	E11
	23	7474N		3	F6,G6,G8
	24	MICROCIRCUIT S1883P		1	F7
	25	RESISTOR PAK, MONOLITHIC 316B272		6	A2,A4,B4,F4,G2,G4
	26	RESISTOR PAK, MONOLITHIC 316B242		6	A3,B2,B3,F2,F3,G3

Material List

Revisions			
LAL	Rev.	Description	Chk Date Approved



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Notes Unless Specified	Disc:	9-27-77	8/3/77
1. Tolerances .002 .03 Dimensioned & .010 Applic.	Check	3-27-77	8/3/77
2. Break All Sharp Edges	Appr.	Shawn	8-1-77
3. Mach. Surfaces ✓	Material		
4. All Dim. in inches	Finish		
5. All True Position Tolerances Apply as MMC	Code Ident.	12705	Dwg. No.
Model No. First Use	Size	596P61520	
Next Assy. First Use	Change Letter	N/C	
Scale	Do Not Scale Drawing		Sheet 5 OF 14

ELECTRO-OPTICAL SYSTEMS
520 NORTH HALSTED STREET, PASADENA, CALIFORNIA 91107

XEROX
ALTO II SERIAL
COMMUNICATION CONTROL
BLOCK DIAGRAM

CONTROL WORD FORMATS

• MNEMONIC INITIF - INITIALIZE INTERFACE CIRCUITS

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
1	0	0	0	LINE	DS	HD	S	STD	X	BAUD RATE					

LINE - ADDRESSES CONTROL WORD TO SELECTED LINE CONTROL; UP TO 8 FULLY PROGRAMMABLE, FULL DUPLEX LINE CONTROLS MAY BE ACCOMMODATED IN ONE ALTO II PROCESSOR.

DS - WHEN SET, SELECTED CONTROL WILL COMMUNICATE WITH A DATA SET; DEFAULT TO DATA TERMINAL.

HD - WHEN SET, SELECTED CONTROL WILL OPERATE HALF-DUPLEX; DEFAULT TO FULL-DUPLEX.

S - INDICATES ALTO SENDING WHEN SET(1) IN HALF-DUPLEX.

STD - SETS SECONDARY REQ. TO SEND (2SCA) TO 1 ON WHEN SET AND INTERFACE IS TO DATA SET, SETS SECONDARY CARR. DET. TO 1 ON WHEN SET AND INTERFACE IS TO DATA TERM.

BAUD RATE - SELECTS BAUD RATE AT WHICH LINE WILL OPERATE.

B12	B13	B14	B15	B12	B13	B14	B15	B12	B13	B14	B15
0	0	1	0	-50 BAUD	0	1	1-2400 BAUD	1	0	0-3400 BAUD	
0	0	1	1	-75 BAUD	1	0	0-9600 BAUD	1	0	1-300 BAUD	
0	1	0	0	-134.5 BAUD	1	0	0-4800 BAUD	1	1	0-150 BAUD	
0	1	0	1	-200 BAUD	1	0	1-1800 BAUD	1	1	1-110 BAUD	
0	1	1	0	-600 BAUD	1	1	0-1200 BAUD				

• MNEMONIC INITRT - INITIALIZE RECEIVER/TRANSMITTER

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
1	0	0	1	LINE	NDB	NPA/S	POL	NB	X	X	X				

NDB - SELECTS NO OF DATA BITS PER CHARACTER
B7 B8 DATA BITS

0	0	5
0	1	6
1	0	7
1	1	8

NPB - NO PARITY BIT WHEN SET

A/S - SELCTS ASYNCHRONOUS (UART) OPERATION WHEN SET OR SYNCHRONOUS (USRT) WHEN NOT SET.

POE - SELCTS EVEN PARITY WHEN SET, ODD PARITY WHEN NOT SET.

NSB - SELCTS NO. OF STOP BITS PER CHARACTER WHEN ASYNC OPERATION IS SELECTED; SELCTS 1 STOP BIT WHEN SET; 2 STOP BITS WHEN NOT SET (EXCEPTION: SELCTS 1.5 STOP BITS WHEN NOT SET AND 5 DATA BITS ARE SELECTED).

• MNEMONIC INITRG - INITIALIZE REGISTERS

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
1	0	1	0	LINE	F/S	DATA FIELD									

F/S - WHEN SET CAUSES DATA FIELD TO BE LOADED INTO USRT TRANSMITTER FILL CHARACTER REGISTER; WHEN NOT SET DATA FIELD WILL BE LOADED INTO USRT RECEIVER SYNC CHARACTER REGISTER.

• MNEMONIC RESET - GENERATE CONTROLLER RESETS

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
1	0	1	1	LINE	D	RRT	RR	X	X	X	X	X	X	X	X

D - GENERATES A LINE DISCONNECT/MASTER CLEAR OF THE SELECTED LINE WHEN SET.

RRT - CLEARS THE RECEIVER/TRANSMITTER (UART/USRT) WHEN SET.

RR - RESETS SYNCHRONOUS RECEIVER, CLEARS STATUS REGISTER, RESTARTS SYNCHRONOUS RECEIVER IN THE BIT TRANSPARENT MODE FOR SYNC SEARCH.

• MNEMONIC SWI - FORCE THE SELECTED CONTROL TO REQUEST AN INTERRUPT

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
1	1	0	0	LINE	X	X	X	X	X	X	X	X	X	X	X

• MNEMONIC INTA - INTERRUPT ACKNOWLEDGE TO THE SELECTED LINE.

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
1	1	0	1	LINE	X	X	X	X	X	X	X	X	X	X	X

STATUS WORD FORMAT

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
D	0	0	1	LINE	SRD	RA	TBM	SCR	FCT	TYPE	INTP	CD	RI	SI	0

• INTERFACE STATUS (HIGH ORDER BYTE)

D - DISCONNECT FLAG: WHEN 1, SET THIS BIT INDICATES LOSS OF RS-232 LINE; DATA SET RDY IF DATA SET INTERFACE IS SELECTED, DATA TERM. RDY IF DATA TERM INTERFACE IS SELECTED.

CD - CARRIER DETECT FLAG.

RI - RING INDICATOR FLAG.

SI - SEND INDICATOR FLAG: WHEN BIT IS SET, INDICATES PRESENCE OF CLEAR TO SEND IF DATA SET INTERFACE IS SELECTED; REQUEST TO SEND IF DATA TERMINAL INTERFACE IS SELECTED.

SRD - REMOTE HALF-DUPLEX BREAK: IN HALF DUPLEX THIS BIT GOING TO A ZERO SIGNALS A BREAK BY THE REMOTE RECEIVING STATION.

• RECEIVER/TRANSMITTER STATUS (LOW ORDER BYTE)

RDA - RECEIVE DATA AVAILABLE.

TBMT - TRANSMIT BUFFER EMPTY.

SCR - SYNC CHARACTER RECEIVED (USRT).

FCT - FILL CHARACTER TRANSMITTED (USRT).

RPE - RECEIVE PARITY ERROR

ROR - RECEIVE OVERFLOW ERROR

RFE - RECEIVE FRAMING ERROR (UART)

• INTERRUPT FLAG (B15)

INTP - $INTP = D + CD + RI + SI + RDA + TBMT + SCR + (SRD \cdot SEND \cdot HDUP)$

DATA WORD FORMAT (RECEIVE OR TRANSMIT)

80	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
0	X	X	X	LINE	X										

backwards (See BCPL stream package)

To set fill and sync char registers

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MATERIAL-XEROX SPEC NO.
FINISH-XEROX SPEC NO.
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TOLERANCES UNLESS OTHERWISE SPECIFIED
DR. 4/2/78 1/15/78
CHK. / /
ANGLES M.E. APPD. / /
E.E. APPD. 2/16/78 / /
APPD. / /
DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES
SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED ✓
DWG A 59GP61520
SIZE SH 6 OF 14

XEROX
CORPORATION

NAME ALTO II SERIAL COMM.
CONTROL - SCHEMATIC DIAGRAM

REV. B

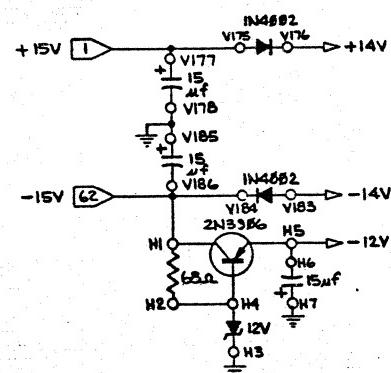
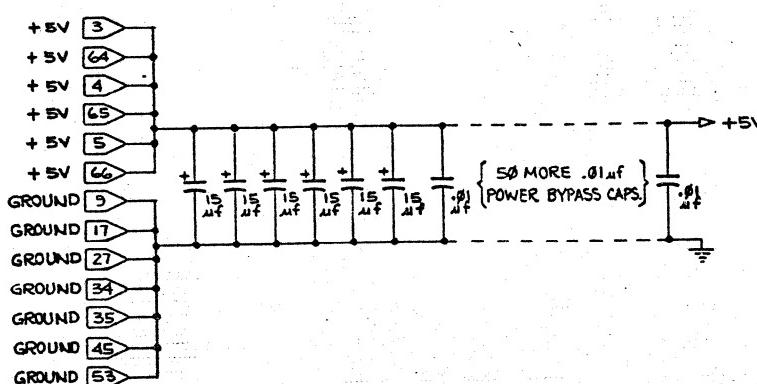
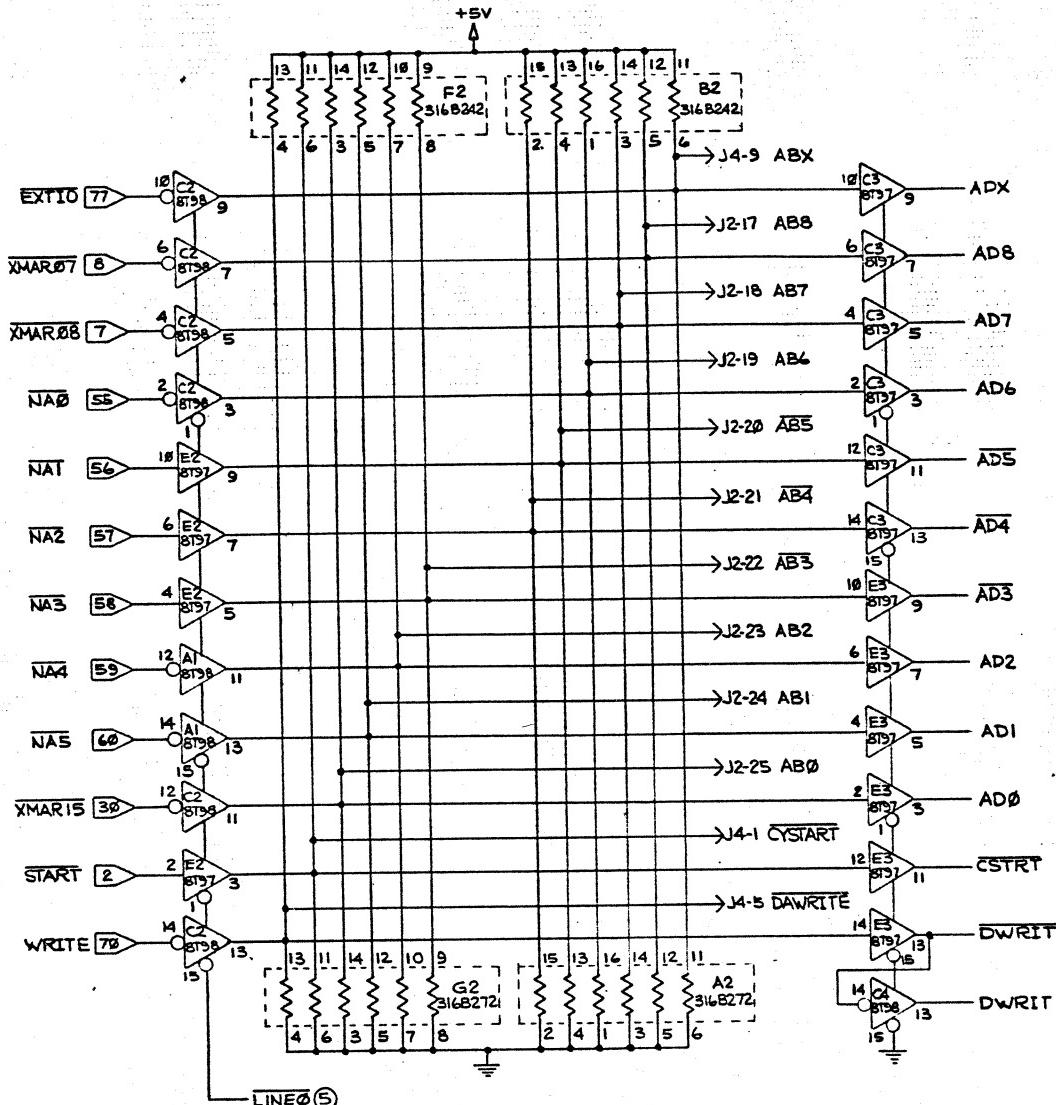
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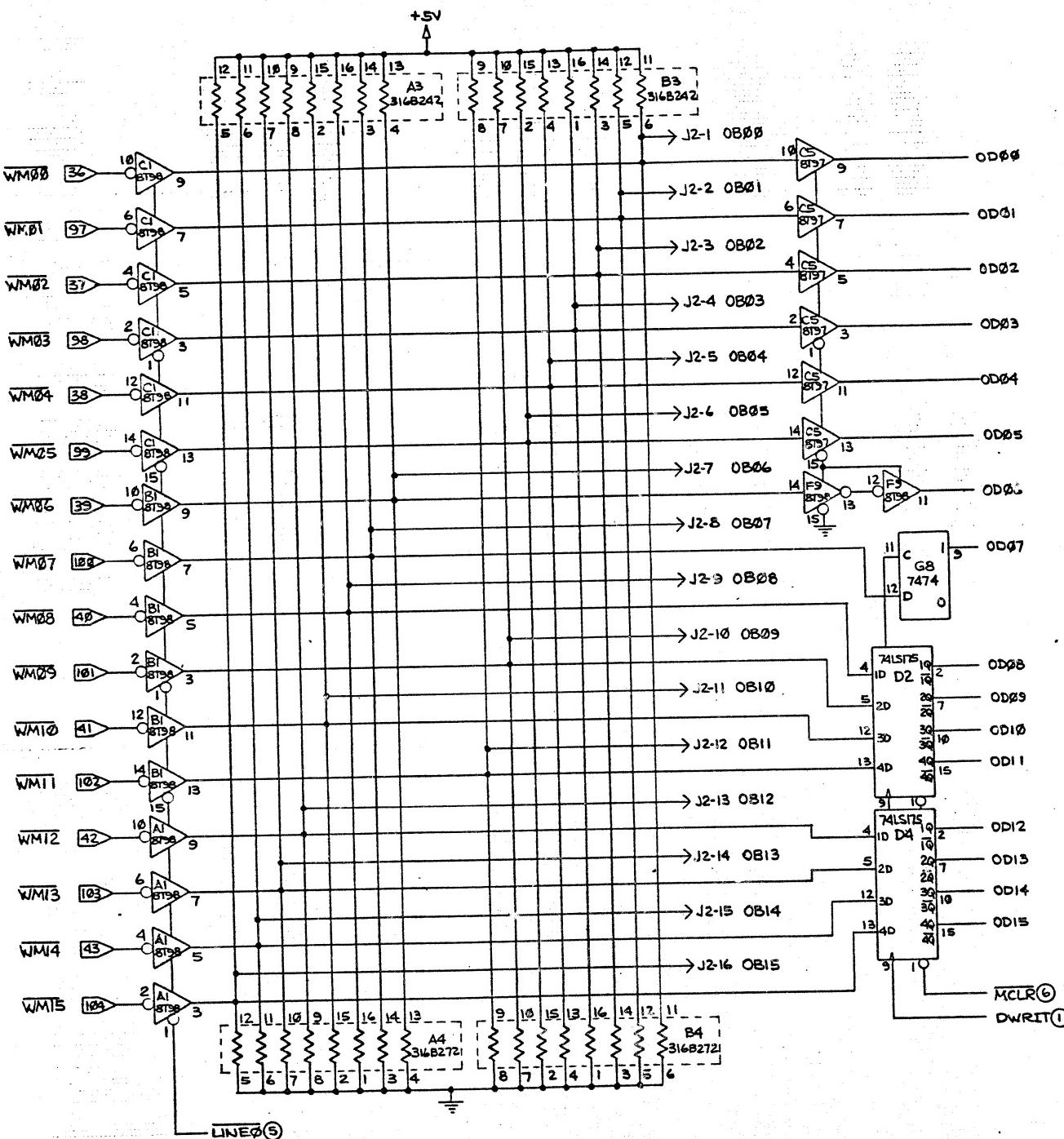
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NOTES: 1. CIRCLED NO. (5) APPENDED TO SIGNAL NAMES INDICATE SHEET NO WHEREON SIGNAL ORIGINATES.
2. SYMBOL  INDICATES J1 CARDEdge CONNECTOR PIN CONNECTION TO MOTHERBOARD BACKPLANE.
3. UNLESS OTHERWISE INDICATED, +5V TO PIN 14 FOR 14-PIN DIP AND PIN 16 FOR 16-PIN DIP, AND GROUND TO PIN 7 FOR 14-PIN DIP AND PIN 8 FOR 16-PIN DIP I.C.S.

MEMORY ADDRESS & CONTROL BUS BUFFER LOGIC

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					ANGLES	M.E. APPD.	E.E. APPD. <i>1/16/78</i> APPD. <i>Shall 2630</i>	
				FINISH-XEROX SPEC NO.	DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES		SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED	DWG 596P61520 REV. B A SIZE SH 7 OF 14
				DO NOT SCALE DRAWING			✓	



MEMORY WRITE BUS BUFFER LOGIC

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FINISH-XEROX SPEC NO.

DO NOT SCALE DRAWING

TOLERANCES UNLESS OTHERWISE SPECIFIED

CHK. / /

ANGLES M.E. APPD. / /

E.E. APPD. 2/6/78

APPD. / /

DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES

DR. 4/27/78/1/2

CHK. / /

M.E. APPD. / /

E.E. APPD. 2/6/78

APPD. / /

SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED ✓

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CORPORATION

NAME ALTO II SERIAL COMM.
CONTROL-SCHEMATIC DIAGRAM

DWG A 596P61520 REV. B
SIZE SH 8 OF 14

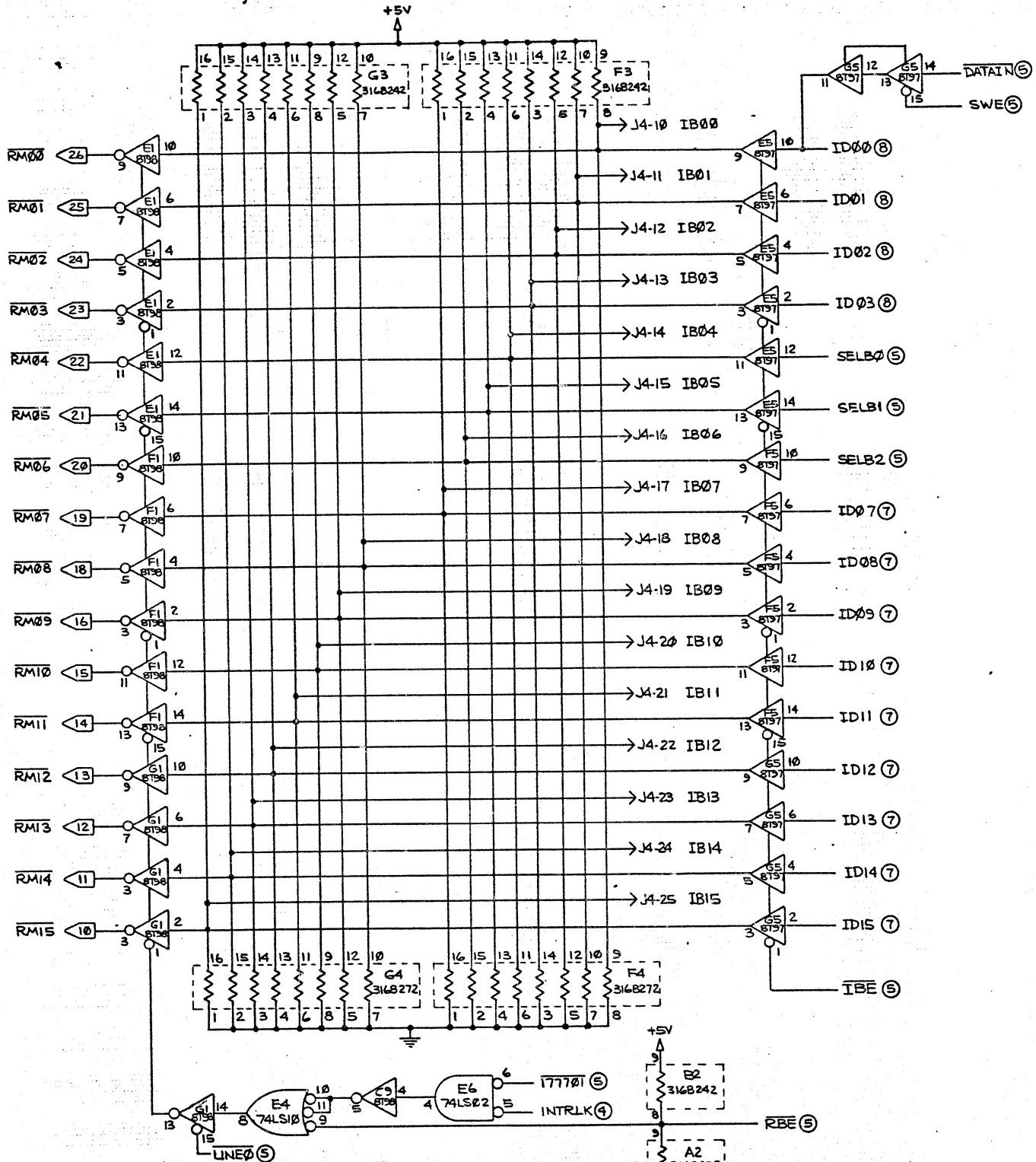
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MEMORY READ BUS BUFFER LOGIC

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					CHK. //	CORPORATION
		FINISH-XEROX SPEC NO.	ANGLES		M.E APPD. //	NAME ALTO II SERIAL COMM.
			E.E APPD. > 1KHz		APPD. //	CONTROL-SCHEMATIC DIAGRAM
DO NOT SCALE DRAWING		DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES		SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED	✓	DWG A 596P61520 REV. B SIZE SH 9 OF 14

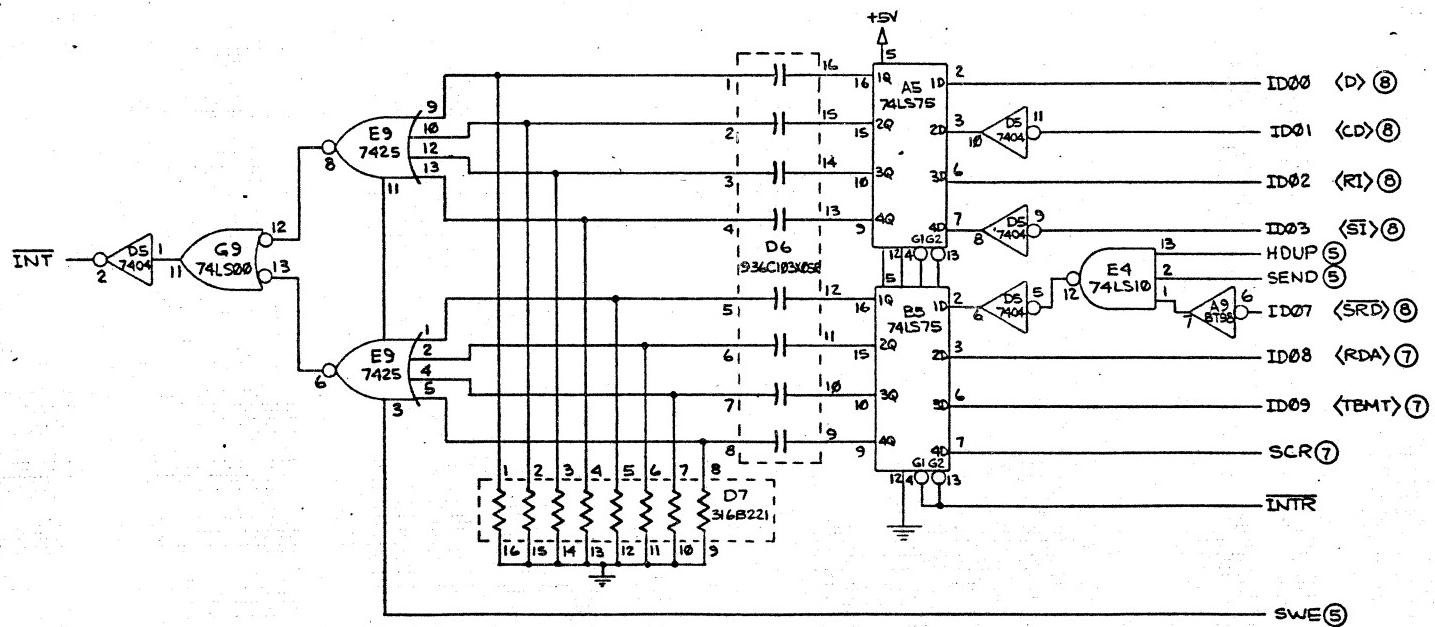
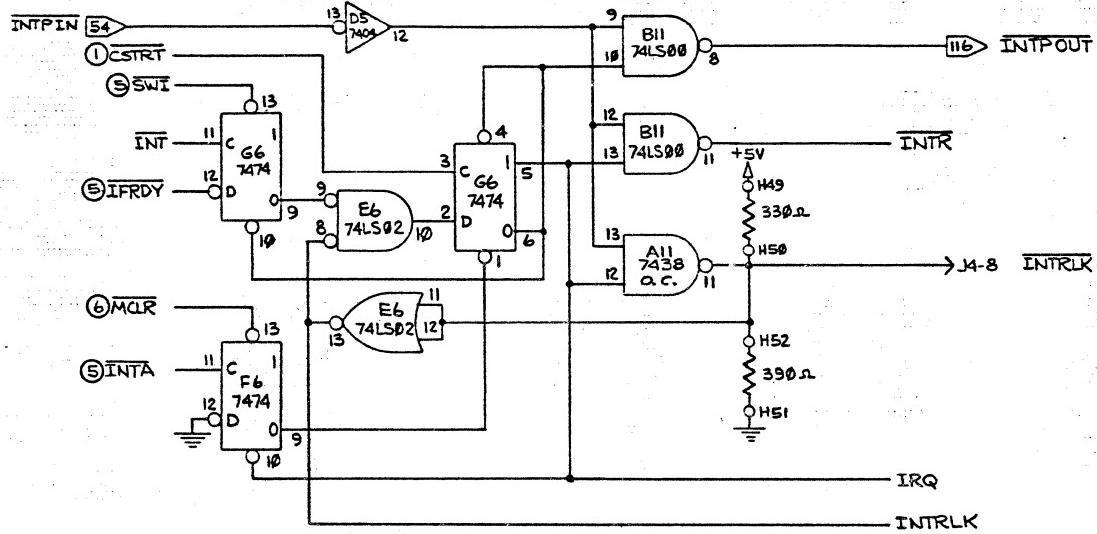
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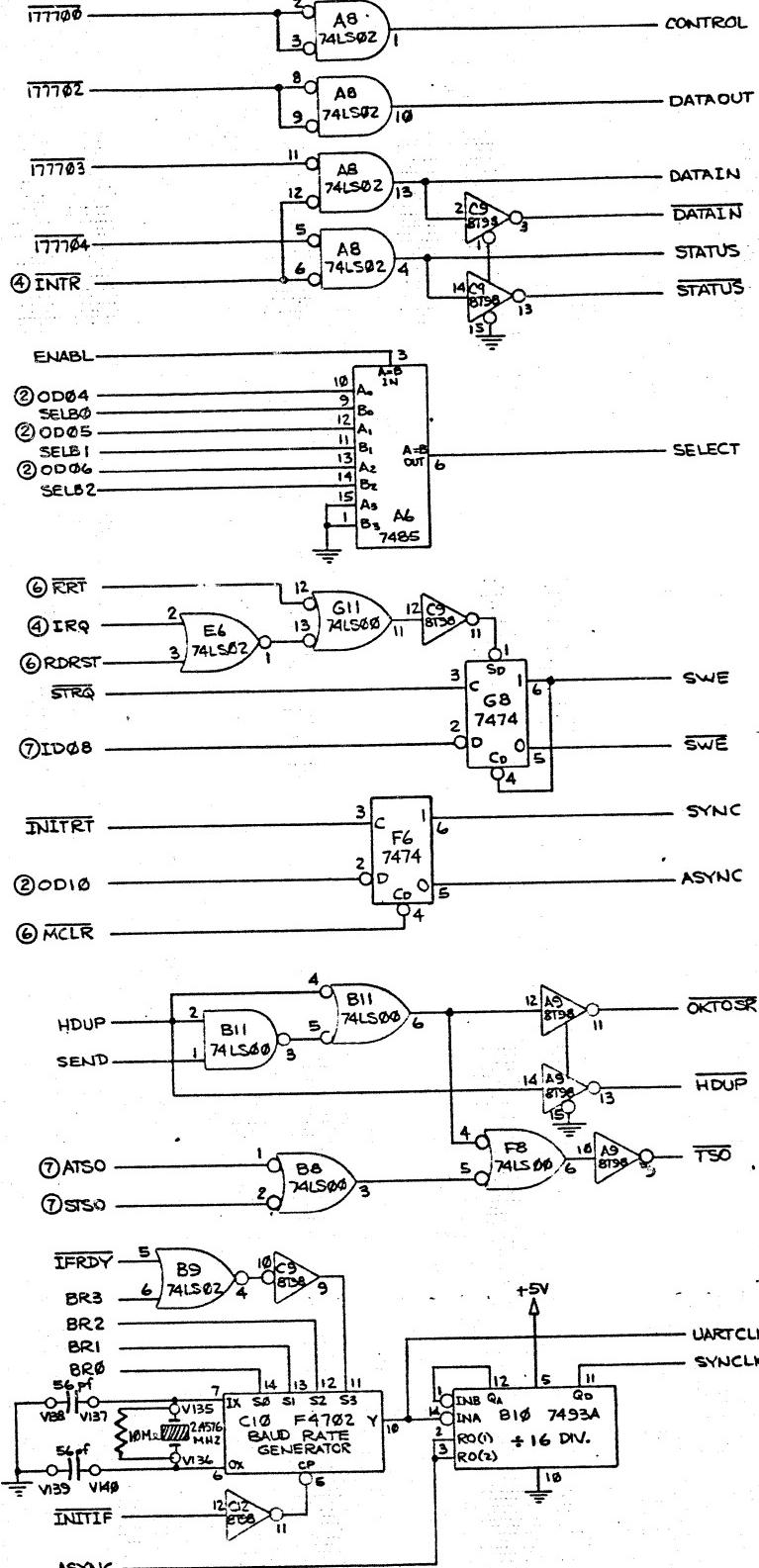
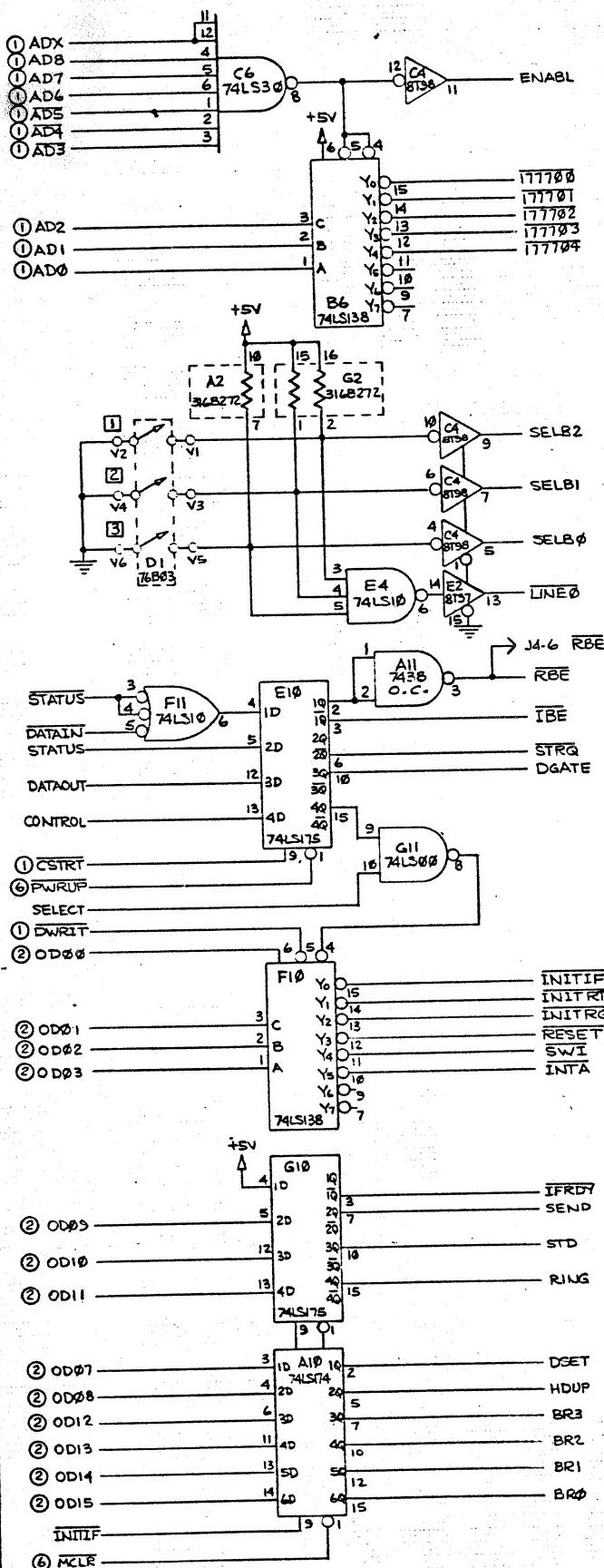
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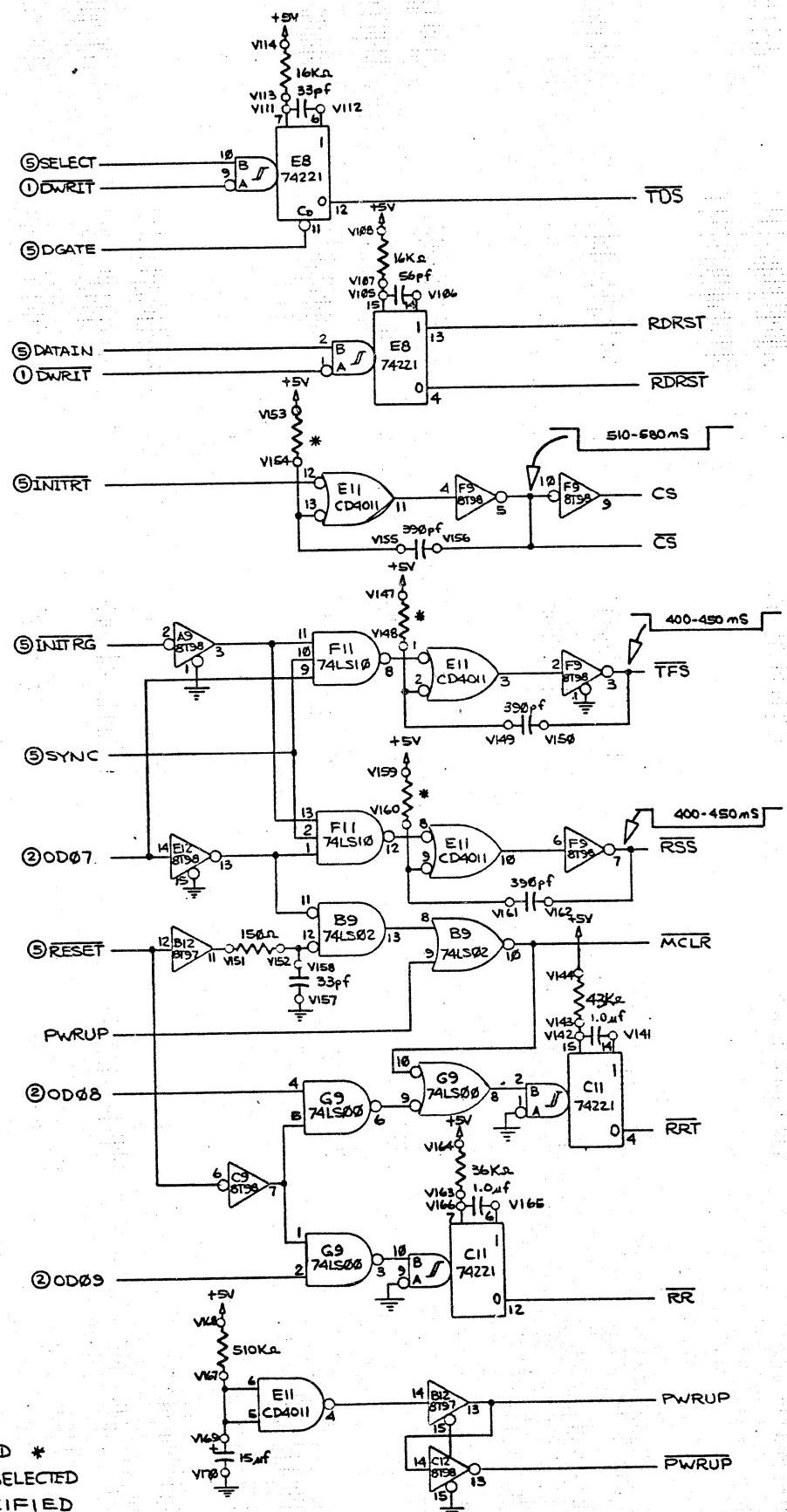
INTERRUPT LOGIC

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						ANGLES	M.E. APPD. / /	NAME ALTO II SERIAL COMM. CONTROL-SCHAEMATIC DIAGRAM
				FINISH-XEROX SPEC NO.		E.E. APPD. 2 K/15	APPD. / /	DWG 596 P61520 REV. B
					DO NOT SCALE DRAWING	DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES	SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED ✓	SIZE SH 10 OF 14



ADDRESS DECODING AND CONTROL LOGIC

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					ANGLES	M.E. APPD.	CHK. / /
						E.E. APPD.	2-16-78
						APPD.	/ /
				DO NOT SCALE DRAWING		DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES	
						SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED ✓	
						DWG A 596 P 615 20	REV. B
						SIZE SH 11 OF 14	



NOTE: COMPONENTS MARKED *
ARE INDIVIDUALLY SELECTED
TO PRODUCE SPECIFIED
PULSE WIDTHS.

POWER UP, RESET & STROBE GENERATOR LOGIC

PRINT DISTRIBUTION	MATERIAL-XEROX SPEC NO.	TOLERANCES UNLESS OTHERWISE SPECIFIED			DR. <i>[Signature]</i> / /
		CHK	ANGLES	M.E. APPD.	
FINISH-XEROX SPEC NO.	DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES			E.E. APPD. <i>2-1618</i> / /	NAME ALTO II SERIAL COMM. CONTROL-SCHMATIC DIAGRAM
	DO NOT SCALE DRAWING			APPD. / /	
					XEROX CORPORATION
					NAME ALTO II SERIAL COMM. CONTROL-SCHMATIC DIAGRAM
DWG	596P61520	REV. B			
A	SIZE SH 12 OF 14				

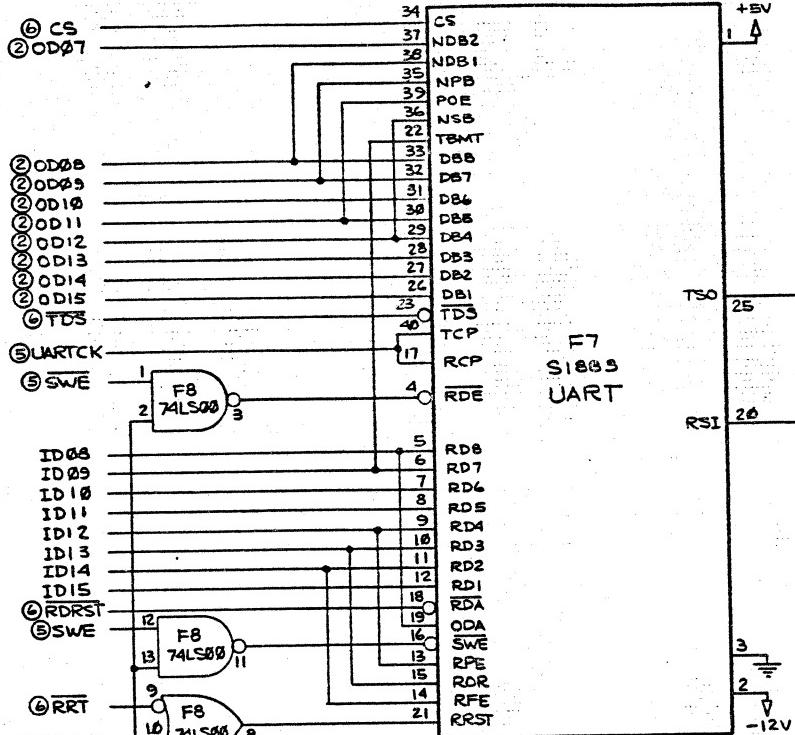
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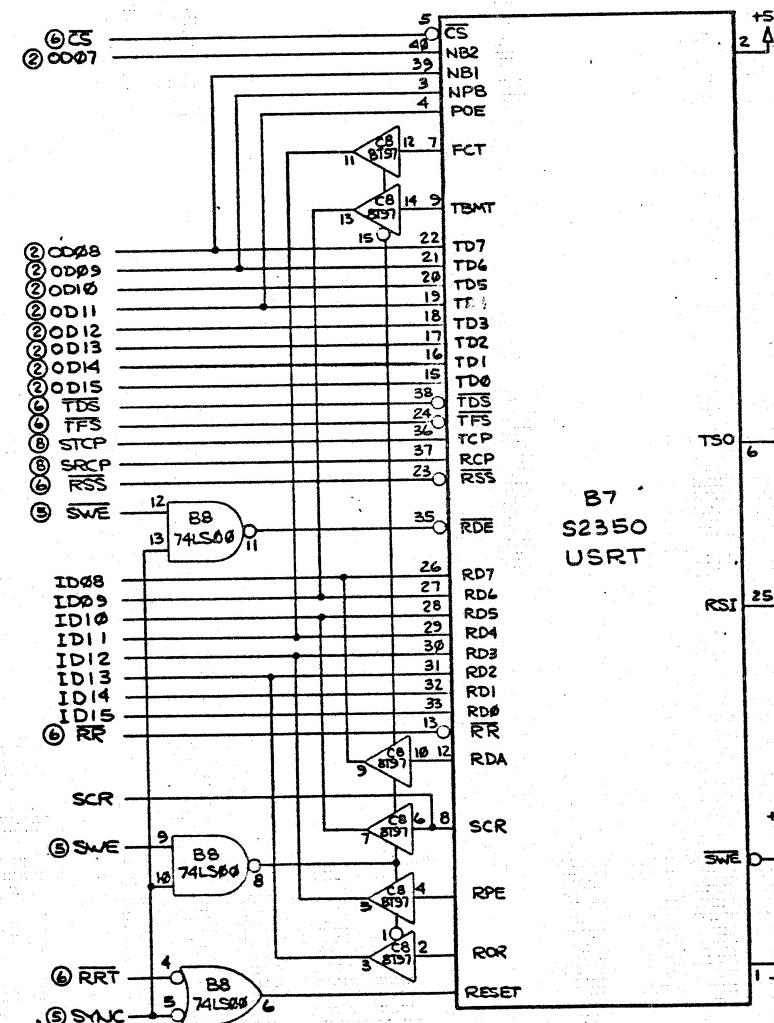
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TSO 25 ATSO

RSI 20 RSI⑧



TSO 6 STSO

RSI 25 RSI⑧

TRANSMIT-RECEIVE LOGIC

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TOLERANCES UNLESS OTHERWISE SPECIFIED

DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES

SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED

DR. 1/12/78 1/31/78

CHK. //

ANGLES M.E. APPD. //

E.E. APPD. 2/16/78

APPD. //

REV. B

XEROX
CORPORATION

NAME ALTO II SERIAL COMM.
CONTROL-SCHMATIC DIAGRAM

DWG 596P61520
A SIZE SH 13 OF 14
REV. B

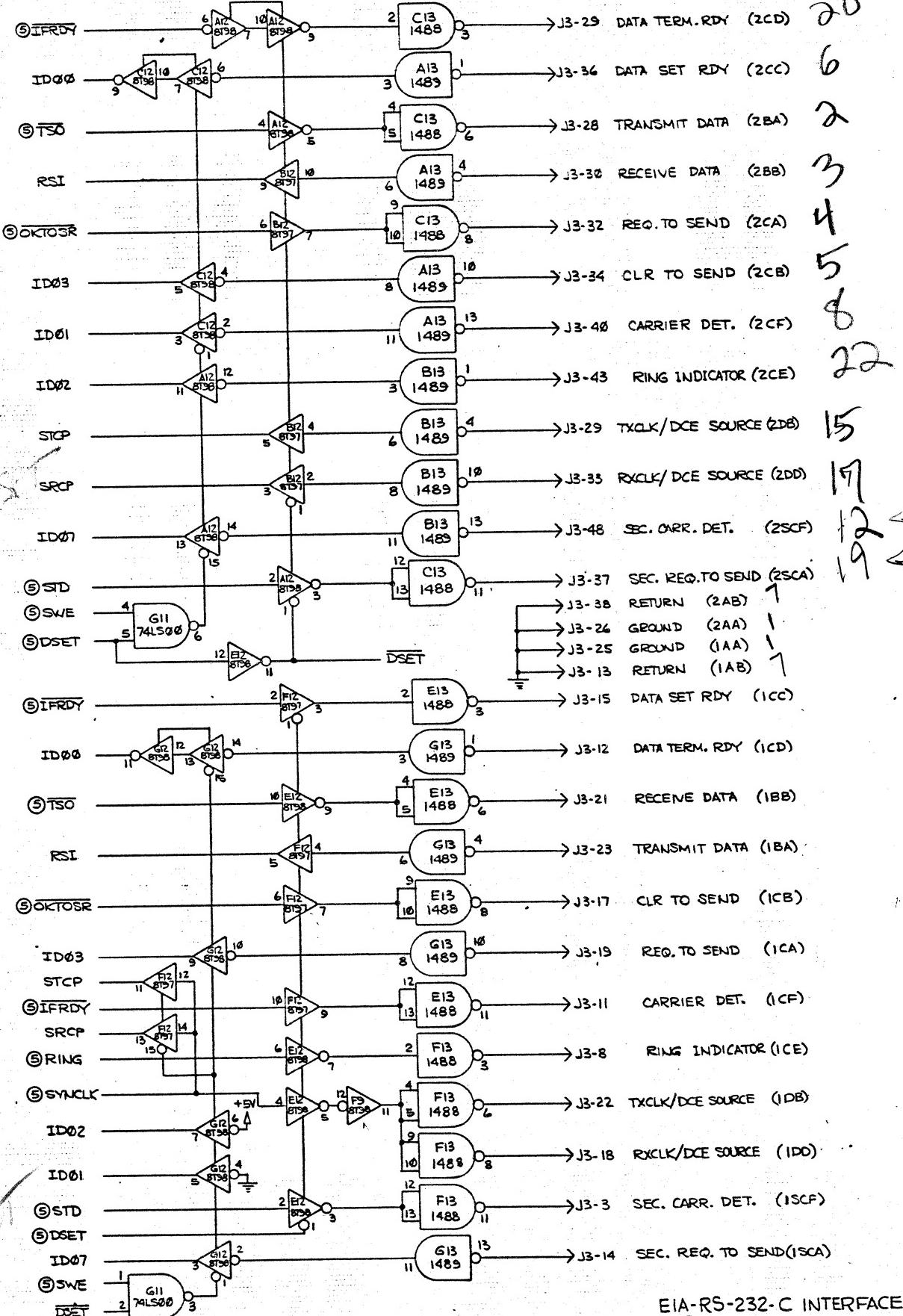
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EIA-RS-232-C INTERFACE LOGIC

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APPD. //

DEVIATIONS FROM INTENDED SHAPE (FLATNESS, ROUNDNESS, SQUARENESS, ETC.) MUST BE WITHIN STATED DIMENSIONAL TOLERANCES

SURFACE QUALITY ON MACHINED SURFACES UNLESS OTHERWISE SPECIFIED ✓

XEROX
CORPORATIONNAME ALTO II SERIAL COMM.
CONTROL-SCHMATIC DIAGRAMDWG E96P61520 REV. B
A SIZE SH 14 OF 14

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